## REMARKS

In view of the above amendments and following remarks, reconsideration of the rejections contained in the Office Action of March 21, 2007 is respectfully requested.

It is initially noted that a number of minor editorial corrections have been made to the specification and abstract for the sake of form. In addition, Figs. 3(A)-(C) have been labeled as Prior Art; please see the accompanying replacement sheets.

In the Office Action, claims 1 and 4 were rejected by the Examiner as being clearly anticipated by JP 2003-222764 to Morooka et al. (cited by Applicants in an Information Disclosure Statement). Further, claims 2, 3, 5-7 and 9-20 were rejected as being unpatentable over Morooka in further view of JP 2003-149502 to Saito et al. (also cited by Applicants in an Information Disclosure Statement). However, it is respectfully submitted that all of the claims pending in the present application clearly define over both of these references.

It is initially noted that claim 1 has been amended for editorial purposes (with respect to the stub) and with respect to the surface roughness of the outer periphery of the stub and the inner hole of the precision sleeve (the claim now stating that both the outer periphery of the stub and the inner hole of the precision sleeve have a surface roughness Ra value of 0.1 $\mu$m or more and 0.5 $\mu$m or less).

As discussed in the specification, the object of the present invention is to provide an optical receptacle that is capable of maintaining high precision and reliability, while being small, with a small number of components and requiring a low production cost. In the optical receptacle, a precision sleeve 12, 22 (for example) has a stub provided with an optical fiber fixed to one end of an inner hole of the precision sleeve through an adhesive 16. A sleeve holder is fixed to an outer periphery of the precision sleeve by press-fitting or through an adhesive.

An outer periphery of the stub and the inner hole of the precision sleeve have a surface roughness Ra value of 0.1 $\mu$m or more and 0.5 $\mu$m or less. The value of the surface roughness Ra of 0.1 $\mu$m or more helps to ensure a uniform thickness of the adhesive on the outer periphery of the stub and the inner hole of the precision sleeve, and helps to avoid the stub being too close to the side wall of the inner hole of the precision sleeve so as to be eccentric thereto. Increasing the surface

roughness Ra value of the outer periphery of the stub and the inner hole of the precision sleeve to more than 0.5 $\mu$m may significantly increase the Ry value (maximum roughness). Preferably the Ra value is more than 0.2 $\mu$m in order to stably provide the adhesive with the uniform thickness, and preferably the surface roughness Ry value is 4.0 $\mu$m or less in order to suppress the shift of the center position of a minimum circumscribed cylinder of the outer periphery with respect to the center of the circle that is formed by the average line of surface roughness.

As noted, claim 1 reflects the aspects of the invention by reciting that the stub is fixed to one end of the inner hole of the precision sleeve through an adhesive. Further, claim 1 recites that the outer periphery of the stub and the inner hole of the precision sleeve have a surface roughness Ra value of 0.1 $\mu$m or more and 0.5 $\mu$m or less. These aspects are not disclosed or suggested by either Morooka or Saito.

The Examiner takes the position that Morooka has a stub 3 with an optical fiber 1b that is fixed to one end of an inner hole of a precision sleeve 5 through an adhesive. Reference is made to paragraphs 22 and 26 on page 6 of the translation. While the translation is not perfect, it is clear from the translation that this is not in fact the case.

Paragraph 22 of this document states that "the fiber stub 3 obtained by the through tube of this ferrule 1a by carrying out insertion immobilization of the optical fiber 1b is inserted in the end section of the inner hole of a sleeve 5, and while pressing fit or adhesion fixing and carrying out the interior of them to the sleeve case 6, it is constituted by fitting a holder 7 into the end section periphery." In other words, paragraph 22 is stating that the fiber stub 3 is inserted in the end section of the inner hole of the sleeve 5, and <u>then</u> an assembly of the fiber stub 3 and the sleeve 5, which is in fact indicated by the use of the term "them" in the quoted section, are fixed to the interior of the sleeve case 6 by press-fitting or through an adhesive. Thus, paragraph 22 does <u>not</u> disclose or suggest that the fiber stub 3 is fixed to the inner hole of the sleeve 5 through an <u>adhesive</u>.

Paragraph 26 also does not support this. In paragraph 26 there is discussed the surface roughness of an end face 3A, which as can be seen from the drawing figure, is the right-hand end face of the stub. The surface roughness of this end face, and the possibility of adhesives entering into irregularities on the end face of optical fiber 1b, is discussed. As can be seen from paragraph

27, reference number 2, which can be seen on end face 3a, is an adhesive layer. Thus, paragraph 26 provides no support for the proposition of using an adhesive to fix the stub 3 to the precision sleeve 5.

It should be noted that paragraph 43 in fact states that "press fit immobilization of the obtained fiber stub was carried out at the holder which consists of stainless steel, the sleeve which becomes the end section periphery of a fiber stub from a zirconia was put, and the optical receptacle sample was prepared by carrying out press fit immobilization of the sleeve case which consists of stainless steel at a holder."

Attention can be further directed to paragraph 36, cited by the Examiner as disclosing the surface roughness, discusses a surface roughness of 0.2 micrometers or less "in consideration of both insertion nature."

Accordingly, it is clear that Morooka neither discloses nor suggests the use of an adhesive.

Saito was cited by the Examiner as teaching that the Ra value of surface roughness for an internal hole 20a into which an optical fiber can be inserted is 0.1 to 0.5 $\mu$m. However, this is a discussion of the insertion of the optical fiber into the tube. There is no disclosure in Saito of the tube with an optical fiber being fixed to an inner hole of a precision sleeve through an adhesive, or that the outer periphery of the capillary tube and the inner hole of a precision sleeve should have a surface roughness Ra value of 0.1 $\mu$m or more and 0.5 $\mu$m or less. Note also that in Saito the surface roughness that is being discussed is for the inner hole. As known to those of skill in the art, the general surface roughness of an optical fiber that is made of quartz glass and produced through drawing is less than 0.1 $\mu$m Ra. Thus there is no suggestion from Saito for both the outer periphery of the stub and the inner hole of the precision sleeve having the recited range of surface roughness.

It is in fact the case that neither Morooka nor Saito discusses or teaches the combination of a stub, having an optical fiber, being fixed to one end of an inner hole of the precision sleeve through an adhesive, together with the outer periphery of the stub and the inner hole of the precision sleeve having a surface roughness Ra value of 0.1 $\mu$m or more and 0.5 $\mu$m or less. The present inventors have discovered that using the adhesive to connect the stub with the inner hole of the precision sleeve and providing the surface roughness range makes the adhesive between the periphery of the

stub and the inner hole of the precision sleeve uniform so that the stub can be held both stably and accurately at the center of the precision sleeve through the medium of the layer of adhesive. Such use of an adhesive in combination with the surface roughness to provide for stability and alignment is not disclosed or suggested in any of the references. While surface roughness is discussed in various aspects in some of the references, there is in fact no discussion of the use of the surface roughness in combination with the adhesive to provide this advantage. Therefore there is no disclosure and no reason to arrive at the present invention from the prior art cited by the Examiner. Indication of such is respectfully requested.

There are a number of further differences between the present invention and the references that have been cited by the Examiner in the dependent claims depending from independent claim 1. However, at this point in the prosecution it is not deemed necessary to further discuss such differences in view of the clear and advantageous difference between claim 1 and the cited references. Nonetheless Applicants reserve their right to further address these additional differences if such becomes necessary.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance, and the Examiner is requested to pass the case to issue. If the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact Applicants' undersigned representative.

Respectfully submitted,

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